 

4.1 Remind me of inverse functions. Can I use the chain rule?

2014-11-07 day 51

fire drill spot: 18C

5) Find k if the curve $y=x^2+k$ is $\boxed{\text{tangent}}$ to the line $y=\boxed{2x}$.

key $\frac{d}{dx}(x^2+k) = 2x$ this gives us the slope everytime we plug in a #.

if the curve $y=x^2+k$ is tangent to a line, then the line is tangent to $y=x^2+k$.

So $y=2x$ is the equation of a tangent line to the curve at a particular point,

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what is the slope of the tangent line? [2]

this matches the value of the derivative of $y=x^2+k$ at the point of tangency.

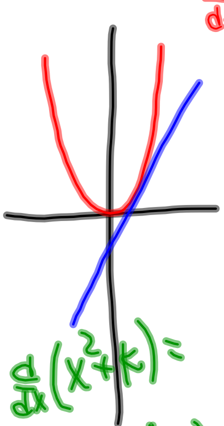
$(1)^2+k=2(1)+4$ alternate question

$\frac{d}{dx}(x^2+k)=2x$.

where does $2x=2$? $\Rightarrow x=1$

what is $y=2x$, when $x=1$? $\Rightarrow 2$

so $x^2+k$ (at $x=1$) $=2$. so $k=1$.



$x^2+k$ (at $x=1$)

$= 2x$ (at $x=1$)

$\frac{d}{dx}(x^2+k)=$ $2x$ AND, at any x, this is the slope of the tangent line.

$1+k=2$

$-1 \quad -1$

$k=1$

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4) $\cos(x^2y^2)=x$

imp diff

$$-\sin(x^2y^2)\cdot\left(2xy^2+x^2 2y\frac{dy}{dx}\right)=1$$

$$\overline{-\sin(x^2y^2)} \qquad \overline{-\sin(x^2y^2)}$$

$$2xy^2+x^2 2y\frac{dy}{dx}=-\csc(x^2y^2)$$

$$-2xy^2 \qquad -2xy^2$$

$$\frac{x^2 2y\frac{dy}{dx}}{x^2 2y}=\frac{-\csc(x^2y^2)-2xy^2}{x^2 2y}$$